

## Claims

What is claimed is:

1. A method of analyzing a polyionic molecule by mass spectrometry, the method comprising steps of:

5                               providing a polyionic molecule;  
                                  attaching at least one charged tag to the polyionic molecule to  
                                  produce a polyionic molecule/tag adduct, wherein the net  
                                  charge on the adduct differs from that of the polyionic  
                                  molecule; and  
10                             analyzing the adduct by mass spectrometry.

2. A method of analyzing a collection of polyionic molecules by mass spectrometry, the method comprising steps of:

15                             providing a collection of polyionic molecules, wherein the molecules  
                                  have different charges;  
                                  attaching at least one charged tag to each polyionic molecule to  
                                  produce a collection of polyionic molecule/tag adducts,  
                                  wherein the net charge on each adduct differs from that of each  
                                  corresponding polyionic molecule; and  
20                             analyzing the collection of adducts by mass spectrometry.

3. A method of claim 1 wherein the step of providing comprises incorporating a charged tag into the polyionic molecule during synthesis of the molecule.

4. A method of claim 1 wherein the step of providing comprises providing a polynucleotide.
5. A method of claim 1 wherein the step of providing comprises providing a protein.
6. A method of claim 1 wherein the step of attaching comprises attaching at least one positively charged tag.
7. A method of claim 1 wherein the step of attaching comprises attaching at least one negatively charged tag.
8. A method of claim 1 wherein the step of attaching comprises attaching at least one tag having both negatively and positively charged groups.
9. A method of claim 1 wherein the step of attaching comprises attaching a tag having at least one quaternary ammonium group.
10. A method of claim 1 wherein the step of attaching comprises attaching the tag by a covalent bond.
11. A method of claim 1 wherein the step of attaching comprises attaching more than one tag.

12. A method of claim 1 wherein the step of attaching comprises attaching the tag to anywhere on the molecule.

13. A method of claim 1 wherein the step of attaching comprises attaching the same number of tags to each molecule.

14. A method of claim 1 wherein the step of attaching comprises resulting in the net charge on the adduct being selected from the group consisting of +3, +2, +1, 0, -1, -2, or -3.

15. A method of claim 1 wherein the step of attaching comprises resulting in the net charge on the adduct being a value other than +1 or -1.

16. A method of claim 1 wherein the step of attaching comprises reducing the net charge on the adduct.

17. A method of claim 2 wherein the step of attaching comprises reducing the net charge on at least one of the adducts to a value of 0.

18. A method of claim 1 wherein the step of attaching comprises steps of:  
attaching a non-charged tag to the polyionic molecule; and  
modifying the tag to create charges on the tag.

19. A method of claim 18 wherein the step of the modifying comprises steps of:

deprotecting functional groups on the tag; and  
creating charges on tag after deprotection.

- 5      20.      A composition comprising a polyionic molecule and tag, wherein the net  
charge of polyionic molecule/tag adduct differs from that of the polyionic  
molecule.